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Characterization of the biotin biosynthesis pathway in Saccharomyces cerevisiae and evidence for a cluster containing BIO5, a novel gene involved in vitamer uptake.

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An engineered mutant of Saccharomyces cerevisiae affected in biotin biosynthesis has been isolated. This mutant allowed the characterization of a bi cluster (BIO3-4-5). We demonstrate that BIO3 (YNR058w) and BIO4 (YNR057c) encode, respectively, a 7, 8-diaminopelargonic acid aminotransferase and a dethiobiotin synthase, involved in the biotin biosynthesi pathway. A novel gene, BIO5 (YNR056c), is present immediately downstream from BIO4. This gene encodes Bio5p, a protein with 11 putative transmembran regions. Uptake experiments performed with labeled 7-keto 8-aminopelargonic acid indicate that Bio5p is responsible for transport into the cell of 7-keto 8-aminopelargonic acid.

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